

Serial No. 09/782,132  
October 21, 2003  
Reply to the Office Action dated May 27, 2003  
Page 2 of 10

**AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**LISTING OF CLAIMS:**

Claim 1 (presently amended): A dual mode band-pass filter comprising:  
a dielectric substrate having first and second main surfaces;  
a metallic film having an opening ~~for coupling two resonance modes and~~  
disposed on the first main surface of the dielectric substrate or inside of the dielectric substrate;

at least one ground electrode disposed on the second main surface of the dielectric substrate or inside of the dielectric substrate, so as to be opposed to the metallic film through a dielectric layer; and

a pair of input-output coupling circuits connected to different portions of the metallic film; wherein

the metallic film has a first resonance mode and a second resonance mode;

the first resonance mode is propagated substantially parallel to an imaginary straight line passing through connection points of the pair of input-output coupling circuits;

the second resonance mode is propagated substantially perpendicular to an imaginary straight line passing through connection points of the pair of input-output coupling circuits;

the first resonance mode has a  $\lambda/2$  resonance in which the resonator length is defined by the length of the metallic film extending in the substantially parallel direction to the imaginary straight line;

Serial No. 09/782,132

October 21, 2003

Reply to the Office Action dated May 27, 2003

Page 3 of 10

the second resonance mode has a  $\lambda/2$  resonance in which the resonator length is defined by the length of the metallic film extending in the substantially perpendicular direction to the imaginary straight line; and

the first and second resonance modes are coupled by the opening of the metallic film.

Claim 2 (original): A dual mode band-pass filter according to claim 1, wherein the opening has a plan shape containing a longitudinal dimension and a width dimension.

Claim 3 (original): A dual mode band-pass filter according to claim 2, wherein the plan shape of the opening is one of a rectangle, an ellipse, and a configuration including one of a rectangle and an ellipse having a bent portion thereof that elongates in a direction intersecting the longitudinal dimension.

Claim 4 (original): A dual mode band-pass filter according to claim 1, wherein the plan shape of the metallic film is one of a rectangle, a rhombus, a regular polygon, a circle, and an ellipse.

Claim 5 (withdrawn): A dual mode band-pass filter according to claim 1, wherein a plurality of openings are formed in the metallic film.

Claim 6 (original): A dual mode band-pass filter according to claim 1, wherein the metallic film is disposed on the first main surface of the dielectric substrate, and the ground electrode is disposed on the second main surface of the dielectric substrate.

Claim 7 (original): A dual mode band-pass filter according to claim 1, wherein the metallic film is disposed at a vertical level inside of the dielectric substrate, and the

Serial No. 09/782,132

October 21, 2003

Reply to the Office Action dated May 27, 2003

Page 4 of 10

ground electrodes are disposed on the first and second main surfaces of the dielectric substrate, whereby the band-pass filter has a tri-plate structure.

Claim 8 (canceled).

Claim 9 (currently amended): A dual mode band-pass filter according to ~~claim 8~~ claim 1, wherein the two resonance modes have different resonance frequencies from each other.

Claim 10 (original): A dual mode band-pass filter according to claim 1, wherein the dielectric substrate is substantially rectangular.

Claim 11 (withdrawn): A dual mode band-pass filter according to claim 1, wherein the metallic film is provided partially on the first main surface of the dielectric substrate.

Claim 12 (original): A dual mode band-pass filter according to claim 1, wherein the metallic film and the opening in the metallic film have substantially the same shape.

Claim 13 (original): A dual mode band-pass filter according to claim 1, wherein the metallic film is made of copper.

Claim 14 (currently amended): A dual mode band-pass filter according to claim 1, wherein the ~~resonance modes include a first resonance mode is a  $\lambda/2$  resonance mode having a resonator length~~ of the first resonance mode that is the length in the longer side direction of the metallic film and a second resonance mode that is a  $\lambda/2$  resonance mode having a the resonator length of second resonance mode that is the length in the shorter side direction of the metallic film.

Serial No. 09/782,132  
October 21, 2003  
Reply to the Office Action dated May 27, 2003  
Page 5 of 10

Claim 15 (original): A dual mode band-pass filter according to claim 1, wherein the opening is arranged such that the resonance frequency of the resonance modes are approximately equal to each other.

Claim 16 (original): A dual mode band-pass filter according to claim 1, wherein the metallic film has longer and shorter sides, and the input-output coupling circuits are connected to one of the longer sides of the metallic film.

Claim 17 (withdrawn): A dual mode band-pass filter according to claim 1, wherein the input-output coupling circuits are connected to the metallic film at positions opposed to each other on the outer side of the portion of the metallic film where the opening is formed, in a direction that is substantially perpendicular to the lengthwise direction of the opening.

Claim 18 (withdrawn): A dual mode band-pass filter according to claim 1, wherein the input-output coupling circuits are connected to the metallic film at positions that define a center angle of about 90° with respect to the metallic film.

Claim 19 (withdrawn): A dual mode band-pass filter according to claim 1, wherein the input-output coupling circuits are connected to the metallic film at positions that define a center angle that is different than 90° with respect to the metallic film.

Claim 20 (withdrawn): A dual mode band-pass filter according to claim 1, wherein the metallic film and the opening in the metallic film have different shapes.